Treatment Outcome Measures

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Treatment Outcome Measures

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An Ideal Exposure Reduction measure would have the following characteristics

- The dose response relationship between the measure and the level of toxin exposure would be well understood, and would ideally be linear throughout the range of smoke exposures
- It would be clinically relevant to a tobacco-caused disease.
- The measure would be able to distinguish smokers from non-smokers.
- It would specifically reflect cigarette smoke consumption and not other sources of nicotine exposure.
- It would not be influenced by environmental exposure to non-tobacco substances.
- The measure would reflect changes that can occur within a few weeks of exposure reduction so that meaningful results can be obtained within the time interval feasible for a clinical trial.
- The measure would distinguish between current/recent exposure and exposure that occurred in the past.

How much reduction in smoking is needed?

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Concurrent Use of Cigarettes and Nicotine Gum or Oral Inhaler

Percent change in blood nicotine concentrations, no of cigarettes and carbon monoxide

	Nicot. conc.	No. of cig.	CO
Carpenter et al 2001	-1	-54	-34
Hurt et al 2000	-11	-36	-15
Fagerström et al 2000	-30	-75	-40
Murray et al 1998	-4	NA	NA
Fagerström et al 1997	-2	-50	-30
Ebert et al 1994	20	NA	NA
Russell et al 1976	-10	-37	-26
Average	-5	-50	-29

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Concurrent Use of Cigarettes and Nicotine Patches

Percent change in blood nicotine concentration, no of cigarettes and carbon monoxide.

	Patch Dose 14-22mg Nicot.conc.	42-63mg Nicot.conc.	No of cig.	CO
Carpenter et al 2001	14		-55	-36
Zevin et al 1998	55	170	NA	NA
Mahmarian et al 1997	69		-70	-44
Pickworth et al 1994	105		-15	-18
Pickworth et al 1994		231	-26	-27
Foulds	22		-16	-10
Average	53	200	-36	-27

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Length of follow up

Relapse pattern same as with cessation

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CVD Risk Factors

• Lipids	Bolliger et al 1999 Hjalmarson et al 1999
• Leucocytes	Hjalmarson et al 1999 Bolliger et al 1999
• Fibrinogen	Eliasson N&TR in press

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Cancer Related Factors

• Mutagenicity	Curvall et al 1987 Benowitz et al 1989
• Nitrosamines e.g.	Hecht et al 1999
– NNAL	Hurt et al 2000
• Adducts e.g.	
– Benzop. Dilepox.	Pulera et al 1997
– 4-aminobiphenyl Hb	
• Mitochondrial DNA	Lin et al 1997

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COPD Related Measures

• Cough and sputum	Jimenez-Ruiz 2001
• Alveolar lavage	Rennard et al 1990
– e.g. Reduction in neutrofils	
• Airway inflammation (bronchoscopy)	Rennard et al 1990
• Bronchial reactivity	Wennike et al 2001
• Medication use	Wennike et al 2001
• Spirometry	Jimenez-Ruiz 2001 Wennike et al 2001

Partial pressure of oxygen PO_2 or oxygen tension

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Actual Disease

- Myocardial infarction
  - Snus, a smokefree tobacco product, reduces occurrence of MI

Huhtasaari et al 1992
Huhtasaari et al 1999
Bolinder et al 1994

Actual Disease

- Low birthweight

Windsor et al 1999
Specker-Walker et al 1997
Wisborg et al 2000

Actual Disease

- Dependence
  - FTND

Fagerström et al submit. manuscript
Jimenez-Ruiz et al Respirat. in press

  - Nicotine dependence syndrome scale?

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Toxins In Hair

- Cadmium?
- Accumulated exposure?

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Research Questions

1. Find out if cardiovascular and COPD patients should be subjected to not just a cessation message but complemented with smoking reduction advice for those unwilling, unable or failing the cessation attempt.

2. Find out in the population of smokers if those not interested in quitting but in taking control over their smoking can be moved forward in terms of e.g. degree of dependence and interest in quitting if exposed to slow delivery clean nicotine products.

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Research Questions Continued

3 A. Investigate the possible link between concentrations of tobacco related chemicals in hair and smoking related disease.

3 B. Thereafter evaluate the best procedures for intervention studies in terms of e.g. type of hair, chemicals to be assessed and duration of intervention needed.

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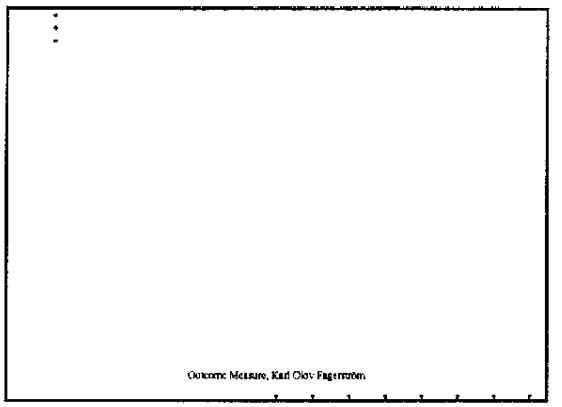

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